

Mass and Related Quantities, Czech Republic, CMI (Czech Metrology Institute)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Comments	NMI Service Identifier
Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?		
Mass	Mass standards	Comparison in air	1	100	mg			1 to 1.2	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	0.1	1	g			1.2 to 3	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	1	10	g			3 to 5	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	10	100	g			5 to 16	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	0.1	1	kg			16 to 80	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	1	10	kg			0.08 to 1.5	mg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	10	50	kg			1.5 to 40	mg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	50	100	kg			0.04 to 0.25	g	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	100	500	kg			0.25 to 1.5	g	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	500	1000	kg			1.5 to 5	g	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	

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Absolute pressure	Vacuum gauges		1.00E-04	1	Pa			$(1.00\text{E}-05 + 1.5\text{E}-02p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.15E-05 Pa to 1.50E-02 Pa	
Absolute pressure	Vacuum gauges		1	5.00E+03	Pa			$(0.02 + 3.50\text{E}-03p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.35E-02 Pa to 1.75E+01 Pa	
Negative gauge pressure	Pressure balance	Gas medium	1	3.20E+03	Pa			$(0.02 + 8.00\text{E}-05p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.01E-02 Pa to 2.76E-01 Pa	
Negative gauge pressure	Pressure balance	Gas medium	5.00E+03	1.00E+05	Pa			$(1 + 1.20\text{E}-05p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.06 Pa to 2.20 Pa	
Gauge pressure	Pressure balance	Gas medium	1	3.20E+03	Pa			$(0.02 + 8.00\text{E}-05p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.01E-02 Pa to 2.76E-01 Pa	
Gauge pressure	Pressure balance	Gas medium	5.00E+03	1.00E+07	Pa			$(0.2 + 1.00\text{E}-05p + 2.00\text{E}-13p^2)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.50E-01 Pa to 1.20E+02 Pa	
Absolute pressure	Pressure balance	Gas medium	5.00+03	1.00E+07	Pa			$(1 + 1.20\text{E}-05p + 2.00\text{E}-13p^2)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.06 Pa to 1.41E+02 Pa	
Gauge pressure	Pressure balance	Oil medium	1.00+05	5.00E+08	Pa			$(9 + 2.30\text{E}-05p + 1.9\text{E}-13p^2)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.13E+01 Pa to 5.90E+04 Pa	
Gauge pressure	Pressure balance	Oil medium	5.00+08	1.00E+09	Pa			$2.00\text{E}-03p$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.00E+06 Pa to 2.00E+06 Pa	
Differential pressure	Pressure balance	Gas medium	1.00E+02	1.00E+06	Pa	Line pressure	0 MPa to 20 MPa	$(1 + 5.00\text{E}-05p)$, p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 1.01 Pa to 5.10E+01 Pa	
Force: tension and compression	Force measuring device	Deadweight	10	3000	N			0.005	%	2	95%	Yes		

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Force: tension and compression	Force measuring device	Deadweight	0.1	10	kN			0.004	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Lever amplification	0.5	150	kN			0.02	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Lever amplification	5	1000	kN			0.02	%	2	95%	Yes		
Torque	Torque measuring devices		10	1000	Nm	Mode	clockwise, anticlockwise	5.0E-04		2	95%	Yes		
Gas flow	Gas flow meters	Turbine, rotary, positive displacement, etc.	4	400	m ³ /h	Fluid	air	0.18	%	2	95%	Yes		CZ1
						Temperature	18.0 °C to 24.0 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	DN 40 - 150							
Gas flow	Gas flow meters	Wet, turbine, rotary, positive displacement, etc.	0.15	17	m ³ /h	Fluid	air	0.18	%	2	95%	Yes		CZ2
						Temperature	18.0 °C to 24.0 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	DN 10 - 100							

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Gas flow	Gas flow meters	Turbine, rotary, positive displacement, rotameter, etc.	0.06	1000	m ³ /h	Fluid	air	0.25	%	2	95%	Yes		CZ3
						Temperature	18.0 °C to 24.0 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	DN 50 - 200							
Gas flow	Gas flow meters	Rotameter	0.01	25	m ³ /h	Fluid	air	1.00	%	2	95%	Yes		CZ4
						Temperature	18.0 °C to 24.0 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	< DN 25							
Gas flow	Gas flow meters	Mass flow meter, rotameter	0.0003	0.3	m ³ /h	Fluid	air	0.20	%	2	95%	Yes		CZ5
						Temperature	15.0 °C to 25.0 °C							
						Absolute pressure	0.1 MPa to 0.4 MPa							
						Pipe size	< DN 50							

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Flowrate	Liquid flow meters	Magnetic, turbine, positive displacement, Coriolis, etc.	0.03	28	kg/s	Liquid	water	0.10	%	2	95%	Yes		CZ6
						Temperature	10 °C to 70 °C							
						Absolute pressure	0.1 MPa to 1 MPa							
						Pipe size	DN 10 - 300							
Flowrate	Liquid flow meters	Positive displacement	0.08	0.8	l/s	Liquid	LPG	0.30	%	2	95%	Yes		CZ7
						Temperature	-10 °C to 30 °C							
						Absolute pressure	0.2 MPa to 1 MPa							
						Pipe size	G1"							
Flowrate	Liquid flow meters	Turbine, Coriolis, positive displacement, etc.	0.11	110	l/s	Liquids	kerosine, gas-oil, oil, LPG	0.15	%	2	95%	Yes		CZ8
						Temperature	0 °C to 85 °C							
						Absolute pressure	0.1 MPa to 3.5 MPa							
						Pipe size	DN 50 - 150, G2"							

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Flowrate	Liquid flow meters	Turbine, Coriolis, positive displacement, etc.	1.9	110	l/s	Liquids	kerosine, gas-oil, oil, LPG	0.20	%	2	95%	Yes		CZ9
						Temperature	0 °C to 85 °C							
						Absolute pressure	0.1 MPa to 3.5 MPa							
						Pipe size	DN 50 - 150, G2"							
Volume (liquid)	Volumetric containers	Glass and metal volumetric vessel	0.02	100	l	Conditions	room temperature, atmospheric pressure	0.01	%	2	95%	Yes	Contained and delivered volume	CZ10
Volume (liquid)	Volumetric containers	Volumetric cylinder, flask, buret, pipette, automatic pipette, sampler	0.5	2000	ml	Conditions	room temperature, atmospheric pressure	0.05	%	2	95%	Yes	Contained and delivered volume	CZ11
Volume (liquid)	Volumetric containers	Syringe, automatic pipette	0.002	5000	ml	Conditions	room temperature, atmospheric pressure	2.00	%	2	95%	Yes	Contained and delivered volume	CZ12